Lab Refrigerator and Freezer Maintenance and Biosafety Recommendations

Safe and reliable storage for preservation of biological materials, samples, and reagents is an important aspect of maintaining a functional lab. As such, the use of freezers and refrigerators for this purpose is common practice across the university. Follow these tips and pointers to make the best use of space, resources, and energy to ensure efficient and safe storage of biohazardous materials.

Never store food or drink for human consumption in any refrigerator or freezer used for lab purposes! Any cold storage units used in conjunction with biohazardous materials must be labelled with a biohazard symbol. A "No food or drink" posting is also recommended.

Cold Storage devices containing Risk Group 2 or 3 materials or biological toxins must be secured: VU IBC policy requires that toxins of biological origin must be secured and accounted for at all times. Additional practice guidance for RG2 or 3 materials recommends similarly controlled and secured storage of these materials. In all circumstances, both need to be maintained in a secure storage device (i.e. lock box in a locked storage unit or lock box in a storage unit inside a locked lab) that can only be accessed by personnel authorized to work with the material. <u>If the public can access your freezer, keep it locked!</u>

Pick the right unit for your needs: Different biomaterials require different storage conditions- it is unnecessary and potentially damaging to keep items in a -80°C if a -20°C is more appropriate. Know the details of what you are working with!

Label items and maintain an inventory: Clearly labelled and dated containers in storage allows the lab to keep track of cell lines, plasmids, reagents, primers, or other experimental samples.

Use plastic freezer boxes when possible: Plastic freezer boxes hold up longer than cardboard and won't mold if the unit fails. Bright colors allow for rapid identification!

Use plastic freezer boxes to prevent mold growth.

Utilize inventory towers: Keeping your storage organized allows for easier inventory management.

Never store loose tubes – use freezer boxes and inventory towers.

Do not use tube racks with loose tubes: Open tube racks allow for the possibility of scattered contents and lost samples.

Maintain inventory to extend the life of your unit: Keeping your cold storage unit organized and in good condition allows for quick and easy access of materials, reducing stress on the mechanical components and extending the life of your unit.

Dispose of old, unwanted, unnecessary, and unlabeled materials according to biohazardous waste guidelines.

- Always use appropriate PPE. This means lab coat, gloves, and safety glasses.
- Nitrile gloves do not offer adequate cold protection – use cold-rated or cryogenic gloves.
- Use caution when discarding sealed tubes with frozen contents. The thawing process may cause tubes to rupture.
- For regulated materials – follow inactivation and disposal protocols specific to those materials.

General Freezer Maintenance

Refrigerators and freezers should be cleaned out and defrosted at least annually or more frequently as needed.

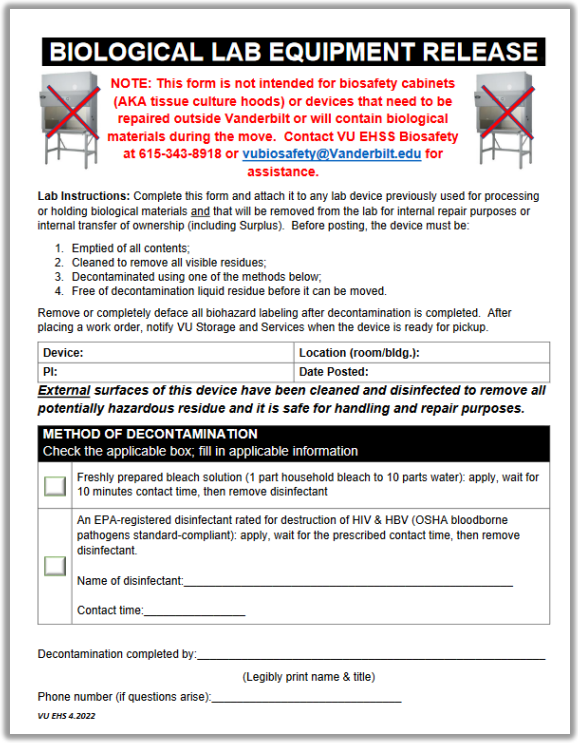
Clean out and defrost freezers at least annually or more frequently as needed.

Recommended steps:

- Remove all contents and transfer to alternative or backup freezer. Please note that this process may take up to two days.
- Follow the manufacturer's instructions to turn unit off and disconnect from power.
- Check manufacturer's instructions to determine if the unit has a drain.
- When possible, relocate freezer to an area that has a floor drain.
- If no floor drain is available, place absorbent materials (absorbent pads, bench towels) beneath the freezer to catch water.
- Prop door open and let ice melt completely – checking every two hours or so to make sure water is being contained. Loose ice can be placed in a sink or pan to melt.
- After ice has melted completely, clean inside with mild detergent and disinfectant as applicable.
- Let unit dry before plugging back in.

Never use a sharp object to dislodge ice in a freezer. Aside from direct hazard posed to your person, the sharp tool can damage the gasket and impede the effectiveness of your unit.

If you are sending a freezer to the repair shop, transferring to another internal lab, or sending to surplus- follow the above instructions for defrosting/disinfecting and use the "Biological Lab Equipment Release" form seen here. This form gets filled out and taped to the equipment to be removed from lab. It confirms the steps for appropriate decontamination and notifies such for VU Storage and Services that the device is free of contaminants. Once complete, the form should be taped to the outside of the unit so that it is clearly visible.



BIOLOGICAL LAB EQUIPMENT RELEASE

NOTE: This form is not intended for biosafety cabinets (AKA tissue culture hoods) or devices that need to be repaired outside Vanderbilt or will contain biological materials during the move. Contact VU EHSS Biosafety at 615-343-8918 or vubiosafety@Vanderbilt.edu for assistance.

Lab Instructions: Complete this form and attach it to any lab device previously used for processing or holding biological materials and that will be removed from the lab for internal repair purposes or internal transfer of ownership (including Surplus). Before posting, the device must be:

1. Emptied of all contents;
2. Cleaned to remove all visible residues;
3. Decontaminated using one of the methods below;
4. Free of decontamination liquid residue before it can be moved.

Remove or completely deface all biohazard labeling after decontamination is completed. After placing a work order, notify VU Storage and Services when the device is ready for pickup.

Device:	Location (room/bldg.):
PI:	Date Posted:

External surfaces of this device have been cleaned and disinfected to remove all potentially hazardous residue and it is safe for handling and repair purposes.

METHOD OF DECONTAMINATION
Check the applicable box; fill in applicable information

- ☐ Freshly prepared bleach solution (1 part household bleach to 10 parts water): apply, wait for 10 minutes contact time, then remove disinfectant
- ☐ An EPA-registered disinfectant rated for destruction of HIV & HBV (OSHA bloodborne pathogens standard-compliant): apply, wait for the prescribed contact time, then remove disinfectant.
  Name of disinfectant:_____
  Contact time:_____

Decontamination completed by:_____
(Legibly print name & title)
Phone number (if questions arise):_____

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Blank release forms can be found on https://www.vanderbilt.edu/facilities/ehs/

Questions related to monitoring, maintaining, or removing your equipment? Reach out to the appropriate contact below.

School of Medicine: Basic Science
Facilities, Infrastructure, Risk Management (FIRM)

vbs-firm@vanderbilt.edu

College of Arts & Science – **Jamison Jones**
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Any additional questions? Please reach out to VU Biosafety at VUBiosafety@vanderbilt.edu for additional information